

SECTION 700 – WORK INVOLVING THE CITY FORCES.

To the City Supplement, **DELETE** in its entirety and **SUBSTITUTE** with the following:

700-1 CITY1 CITY FORCE WORK.

700-1.1 General1.1 General.

—This subsection covers items of Work that involve coordination with and the services provided by the City Forces. The Contractor shall provide those services typically provided by the City Forces in accordance with the applicable

a) Specifications here if:

1. Additive Aalternates are included in the Bid and awarded, or,

tThose services are —or it is shown on the pPlans or in the bBridging Documents.—or

2. or separate Bid item is provided for the Contractor to provide services that are typically provided by the City Forces, the applicable specifications in this subsection shall become effective.

b) [w1]The City Forces or, the Contractor, or both will be responsible for providing the residents with water service, by means of high-lining (i.e., temporary above ground supply lines), during construction as shown on the Plans.

c) The Only City Forces will isolate the water system, and perform all shutdowns by closing valves on water mains, —cutting and plugging, or both unless otherwise specified in the Contract Documents. Trial shutdowns will be performed by the City at all shutdown locations. [w2]

—The City's Public Utilities Department, (619) 527-7423, shall be notified by the Contractor 2030 [w3] Working Days prior to beginning of Work that involves high-lining, cutting and plugging of, or making connection to the exiting water mains. The beginning of the Work shall be scheduled at the pre-construction meeting. The information on low demand times is available from the City's Public Utilities Department. [w4]

d) The City is responsible for cost of the City Forces work. The Engineer will coordinate all interactions between the Contractor and the City Water Operations Division, the City Water Quality Laboratory, and other City organizations.

e) The Work shall be done in accordance with the applicable AWWA standards and State Department of Public Health codes.

f) The Contractor shall reconnect existing fire services and fire hydrants, after the acceptance of the new water main. The Contractor shall re-energize fire services and shall coordinate the Work with the property owner(s). The Contractor shall reconnect water services to the meters.

700-1.2 High-lining.

700-1.2.1 High-lining by the City Forces.

700-1.2.1.1 Furnishing Materials. **If required in the Contract Documents and a separate Bid item is provided** for ~~the~~ Contractor furnished materials for City Force's highline work, the Contractor shall furnish the necessary materials for the City Forces' highline work as shown on the Plans to the City. The Contractor shall coordinate closely with the City Forces for the delivery of materials. The delivery location for furnished materials shall be determined by the City Forces. No materials shall be delivered to the City until the City Forces are ready to construct their work. **Unless otherwise specified in the Contract Documents,** the City will retain the high-lining materials at the end of construction if the City performs the high-lining. [w5]

700-1.2.1.2 High-Lining Removed by the Contractor. If the City Forces are not available to remove the high-lining materials, the Engineer will direct the Contractor to pickup and deliver all the City high-lining materials to Water Operations Division at: Chollas Station, 2797 Caminito Chollas, San Diego, CA 92105.

The City's Water Utilities ~~Coordinator~~coordinator, (619) 527-7423, shall be contacted by the Contractor 5 Working Days before delivery of the high-lining material. After removal of high-lining materials, the Contractor shall repair all trenches created for the installation of the high-line and remove all excess temporary resurfacing materials. No high-lining materials shall be removed until the City Forces have disconnected the high-line from the water system.

700-1.2.1.3 Payment. The payment for the furnished material for the City Force high-line work shall cover materials (i.e., fittings, valves, and hardware) including delivery and unloading. The Contractor will be paid under the Bid item for "Contractor Furnished Materials for the City Forces High-line Work."

If the Contractor requests the City Forces to high-line in excess of what is shown on the Plans, those costs for high-lining will be borne by the Contractor and billed to the Contractor. Costs will be billed at the current hourly rates (loaded) according to the schedule available for the Public Utilities Department.

If high-lining by Contractor is awarded under "Additive Alternate," payment for high-lining removed by Contractor shall be included in the unit price bid for "High-lining Installation and Dismantling". Otherwise, if the City Forces install the high-line system and the Contractor is requested to remove the high-lining and deliver at the City designated location, payment shall be in accordance with the unit price bid for "High-lining Removed by Contractor" in the base Bid.

700-1.2.2 High-lining by the Contractor. When required, the Contractor shall bypass sections of the existing water main line with a temporary above-ground supply line (high-line) as shown on the Plans and in phases shown on the Schedule.

a) The Contractor shall furnish all high-line materials. [w6]

~~a)~~b) The Contractor shall provide the Engineer a schedule for the high-line work at least 20 working~~30~~ [w7] days prior to work required by the City Forces (e.g., connections or disconnects).

~~b)~~c) Contractor shall phase the Project such that all structures in the area are within 1,000 feet of an active fire hydrant, measured using streets, private roads, or other routes driven by emergency vehicles. Phases are required so that the high-line provides sufficient water pressure to affected properties.

~~e)~~d) The Work includes shutoff valves at intersections to isolate sections of the high-line if there is a leak or break to minimize the water service shutdowns.

~~d)e)~~ The high-line system shall have a dual feed and provide continuous full service to connected water services until the new water main line is installed and in operation. The Work shall be coordinated, scheduled, and performed to minimize disruption of water services during installation and removal of the high-line system.

~~e)f)~~ The Contractor shall flush, disinfect, and leak test the high-line in accordance with the applicable codes and regulations prior to connection work -beginning.

~~f)g)~~ The Contractor will perform connections to high-lining system and disconnects to meters and fire hydrants, after the City has verified the high-lining system has passed bacteriological testing.

Bacteriological sampling and testing will be performed by the City Water Quality Laboratory.

~~g)h)~~ The Contractor shall ensure proper installation, pressure control, or operation of the high-line to avoid damage to water users' property and related public health and safety issues.

i) The Contractor shall transfer the new fire services and water services to the meter after the new mains have been accepted. While making the transfers the Contractor shall, once service is interrupted, diligently pursue the required work until service has been fully restored.

j) The Contactor shall notify the Engineer 5 Working Days prior to any work that will affect water service. The Contractor shall prepare and distribute, after approval by the City, written notification 3 Working Days prior to starting Work on any water main that will affect service. This notification shall be delivered door-to-door to water users in the affected area. A copy shall be delivered to the Engineer on the date of user notification. [w8]

~~The Contractor shall notify each consumer affected by a water outage 3 Working Days prior to the scheduled interruption.~~ For each service connection, the Contractor shall also notify the customer immediately prior to beginning work which will interrupt service and will again notify the customer immediately after the service is restored. [w9]

The Contractor shall notify all consumers with fire services 20 Working Days in advance of any shutdown.

~~h)~~ _____

~~i)~~ _____

~~j)k)~~ The Contractor shall dismantle and remove the high-line system from the Site, and restore streets, gutters, fire hydrants, and other disturbed facilities and surface improvements within 5 Working Days from the time the City Forces complete their [w10] reconnections are completed.

~~k)~~ ~~For P~~parallel mains, fire services and water services which are not high-lined shall be connected to the meter by the Contractor only after the adjacent sections of the new main have been fully constructed, hydrostatic and chlorine residual tested, and certified acceptable by the Public Utilities Department.

l) ~~The Contractor shall be responsible for the extension and connections i.e., transfer of the new water services to the water [meters] [w11]. While making the transfers the Contractor shall, once service is interrupted, diligently pursue the required work until service has been fully restored. The Contractor shall notify each consumer affected by a water outage 3 Working Days prior to the scheduled interruption.~~

- m) Cleanliness of the main shall not be compromised; otherwise, the Engineer will decide whether re-disinfection is required at the Contractor's expense.

Services shall be thoroughly flushed by the Contractor prior to restoration of water supply to customer's premises.

700-1.2.2.1 Reference Specifications, Codes, and Standards. Reference specifications, codes, and standards shall be the latest unless a specific code issue date, edition, or adoption date is specified.

- a) The Work shall be in accordance with the applicable parts of the following codes and safety regulations:

- i. Uniform Fire Code.
- ii. Uniform Mechanical Code.
- iii. Uniform Plumbing Code.
- iv. City of San Diego Water and Municipal Sewer Approved Materials List, where applicable.
- v. State Department of Public Health (previously known as DHS), Office of Drinking Water publication titled, "Approved for Service Isolation in California Public Water Systems."
- vi. Applicable the City, local, state, and federal codes and regulations.

- b) The Work shall be in accordance with the following commercial and industrial standards:

- i. ANSI/AWWA C606 - Grooved and Shouldered Pipe Joints.
- ii. ASTM A53 - Specification for Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.
- iii. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- iv. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dipped) on Iron and Steel Hardware
- v. ASTM A307 - Specification for Carbon Steel Bolts and Studs, 6,000 PSI Tensile Strength.
- vi. ASTM A395 & 536 - Specification for Snap-Joint Coupling grade 65 45-15 and grade 64-45-12 coating orange enamel.
- vii. AWWA C511 - Standard for Reduced Pressure Principle Backflow Prevention Assembly.
- viii. AWWA C651 - Disinfecting Water Mains

700-1.2.2.2 Submittals. Prior to the start of the Work, the Contractor shall submit the following in accordance with 2-5.3, "Submittals:"

- a) Itemized list of high-lining materials to be used, including information on:

- i. which parts are new and which have been used before and,

~~ii. the age of used parts and approximate number of times they have been utilized, and~~[w12]

~~iii.ii.~~ verification that used parts have only been used to convey potable water.

- b) Catalog data for all high-lining materials and components required.
- c) High-line system installation and detail drawings (i.e., shop and working drawings) prior to ordering or purchasing material.
- d) High-lining schedule prior to ordering or purchasing material of any part of the high-lining system.
- e) Traffic control drawings to Traffic Control Section and shall obtain a permit a minimum of 2 Working Days (5 Working Days when the work affects a traffic signal) prior to ordering or purchasing material of each phase of the high-lining system.

700-1.2.2.3 Quality Assurance. The high-lining system shall be flushed, tested for leaks, and disinfected in accordance with 700-1.2.2.7, "Start-Up Procedures" and shall pass the specified bacteriological tests prior to ~~the City Forces making the~~[w13]connections.

700-1.2.2.4 Materials. Materials may have been used previously, but shall be in good working condition, and free of defect, and have only been used to convey potable water. The Contractor shall procure pipe, fittings, adapters, materials, and components required for a complete and operable high-lining system installation. Products and materials shall be suitable for the intended purpose, ~~free of defects,~~[w14]and recommended by the manufacturer for the application intended. Hoses shall be used only at corners and curves and for connections to user's service meter(s).

- a) Pipe. Pipes shall be fabricated largely in sections of 2" Galvanized steel pipe and conform to the following:

- i. ASTM A53 or other equal ASTM galvanized pipe standard.

- ii. Minimum wall thickness shall be Schedule 40 (0.154").

- iii. Pipe ends shall be machine cut or rolled for grooved couplings and fittings in compliance with ANSI/AWWA C606.

- ~~iv. Fittings and Couplings.~~[w15]

- b) Fittings and Couplings. Fittings shall be ductile iron. Fittings and couplings, including tees, ~~reducing tees, laterals, wyes, elbows, pipe couplings~~[w16], reducers, caps, plugs, and adapters, shall have standard flexible grooved mechanical joint connections in compliance with ANSI/AWWA C 606. Minimum pressure rating shall be 200 psig.

- i. Housing material shall be ductile iron coated with the manufacturer's standard painting system. Coupling gasket material shall be standard Ethylene-Polypropylene Diene Monomer (EPDM) rubber.

- ii. Couplings shall be Victaulic Style 78 or approved equal.

- iii. The branch outlet of reducing tees shall be 1" male pipe thread. Connections of standard tees shall be grooved.

- iv. Grooved elbows with 11¼, 22½, 45 and 90-degree bend angles will be required to configure the high-line piping system to existing bends and contours at the Site.

v. Manufacturers: Victaulic, Mech-Line, or approved equal.

c) Meter connections.

i. For meters up to 1" size, the connections shall be 90-degree, long radius, brass elbow couplings with a swivel meter nut on one end and male pipe threads on the other.

A. The swivel meter nut shall be sized to fit the specific meter. The male pipe thread end shall be fitted with a galvanized steel "Chicago" two (2)-lug, quarter-turn, quick disconnect hose fitting-to-female pipe thread fitting.

B. Manufacturers: James Jones Co., Ford Meter Box Co., Inc., or approved equal.

ii. For meters larger than 1", the connections shall be elbows with a 2-bolt Class 125 flange on one end and female pipe threads on the other.

A. The flange shall be sized to fit the specific meter. The female pipe thread end shall be fitted with a short pipe thread to grooved connection adapter nipple.

B. Alternately, the assembly can be a 2-bolt Class 125 flange-to-male pipe thread fitting, a threaded pipe elbow, and a short pipe thread-to-grooved connection adapter nipple.

C. Manufacturers: James Jones Co., Ford Meter Box Co., Inc., or approved equal.

D. Bushings, reducers, and adapters. ~~The City Forces will be responsible for all fit-up and connections in the system.~~ [w17] The Contractor shall provide all bushings, reducers, and adapters required to connect the high-line system to the existing fire hydrants, meters, and other facilities at the Site. Bushings, reducers, and adapters shall be provided at no additional cost to the City.

E. Pipe-to-hose adapters. For 1" hoses, the adapter shall be a 1", galvanized steel, "Chicago" 2-lug, quarter-turn, quick disconnect hose-to-female pipe thread fitting.

F. Fire hydrant-to-pipe connectors, the actual connection to the live fire hydrant ~~to be done by the City Forces~~ shall be a brass or bronze 1.5" female fire hydrant thread to 2" male pipe thread fitting.

d) Bolts and Fasteners. Bolts and fasteners, including bolts, nuts, and washers, shall meet the minimum requirements of ASTM A 307, and shall be hot dipped galvanized according to ASTM A 153. Bolts shall be installed with nuts face down.

e) Valves.

i. Pipe shutoff valves shall be 2", lever handle, two-position, manual butterfly valves with grooved mechanical connections in compliance with ASTM C 606. Minimum pressure rating shall be 200 psig.

A. Housing material shall be ductile iron coated with the manufacturer's standard painting system. Seal material shall be standard EPDM rubber.

B. Manufacturers: Victaulic, Mech-Line, or approved equal.

ii. Curb stop valves shall be bronze full-port ball valves without handles.

- A. Seats shall be molded Buna-N rubber or other approved material. The ball shall be Teflon-coated brass or bronze. Approved plastic ball materials will be considered as substitutes.
- B. Size shall be 1-inch with female pipe thread connections. Other sizes and end connections may be required to accommodate specific user connections.
- C. Manufacturers: James Jones Co., Ford Meter Box Co., Inc., A. Y. McDonald Mfg. Co., or approved equal.

f) Hoses.

- i. User connection (Service Meters).

~~ii.~~ For ~~w18~~ meters up to 1", the hose shall be a 1" standard general service air compressor hose with EPDM cover and 300 WP rating. End connections shall be galvanized steel, "Chicago" 2-lug, quarter-turn, quick disconnect fittings banded to the hose.

~~iii.~~ Manufacturer: Thermoid, or approved equal.

~~iv.~~ ~~ii.~~ Curves and curbs.

~~v.~~ Hose shall be 2" standard general service air compressor hose with EPDM cover and 300 WP rating. End connections shall be galvanized steel grooved mechanical end fittings in compliance with ASTM C606 banded to the hose.

~~vi.~~ Manufacturer: Thermoid, or approved equal.

g) Check Valves.

- i. Check valves shall be swing check type with grooved mechanical connections in compliance with ASTM C606. Minimum pressure rating shall be 200 psig.
- ii. Housing material shall be ductile iron coated with the manufacturer's standard painting system. Seal material shall be standard EPDM rubber.
- iii. Manufacturers: Victaulic, Mech-Line, or approved equal.

h) Backflow Preventers.

- i. Shall meet the requirements of AWWA C511.
- ii. Manufacturer and model shall be approved by Department of Public Health (previously known as DHS).

i) Pressure Regulators.

- i. If required, the Contractor shall provide 2" pipe size of bronze or ductile iron construction. Materials, coatings, seals, diaphragms, and trim shall be approved for potable water service. Connections shall be pipe threaded union couplings.
- ii. Pressure ratings and regulation ranges shall be approved for the pressure zones involved.
- iii. Manufacturer: Braukmann or approved equal.

j) Temporary Asphalt (Coldmix). Temporary asphalt shall be provided by the Contractor on a unit price basis.

k) Pipe Supports.

i. Shall be adjustable type and fabricated from galvanized carbon steel.

ii. Manufacturers: Grinnell, Tolco, or approved equal.

700-1.2.2.5 Construction.

a) Authorization. The Contractor shall not order/purchase material of any part of the high-lining system without an approved submittal and written authorization by the Engineer.

b) Workmanship.

i. Contractor workmanship shall meet the accepted standards of the trades involved.

ii. High-lining system shall be installed and maintained such that ~~they are~~ it is -neat, orderly, and leak-free, and shall be arranged to minimize interference with or present a hazard to normal usage of streets, sidewalks, driveways, and other affected facilities.

iii. High-lining system shall be installed in such a manner that it does not cause flooding to the surrounding area.

iv. Excess materials and debris shall be removed from the Site by the end of the Working Day on which they are generated.

c) Water Users Notification. The Contractor shall coordinate the Work to minimize the duration of water shutdowns and outages.

d) Emergency Telephone.

i. The 24-hour Emergency Services telephone number which shall be listed in user notifications, imprinted on safety barricades, and posted in the Work area shall be the Contractor's emergency number.

ii. On receipt of notification of a problem in the work area, the Contractor shall immediately notify the Engineer and Water Operations Division (City Forces). In case of emergency e.g., life threat, the Contractor shall contact Emergency Services.

e) Repair and Maintenance.

i. The Contractor shall maintain the temporary asphalt ("coldmix") protective ramps for the duration of the high-line installation. Coldmix damage discovered or reported shall be repaired that same day by the Contractor.

ii. The Contractor shall repair and maintain the high-line system during Normal Working Hours.

iii. The Contractor shall provide replacement parts needed for highline repairs. Leaks or damage shall be repaired within one hour of discovery or reporting. These repair criteria shall apply to leaks or damage arising for any reason, including vandalism and damage by Contractor personnel, equipment, or work activities.

- iv. If the repair involves any disassembly of the system, the Contractor shall disinfect and flush the affected components according to AWWA C651. This will be done in the presence of the City Public Utilities Department, Water Operations Division employee familiar with the water system.
- v. Repair work shall be inspected and approved by the Engineer and the City Public Utilities Department, Water Operations employee familiar with the water system. At the sole discretion of the Engineer, the Contractor shall be billed separately for non-responsive or otherwise unacceptable repair and maintenance work that the City must do to restore any service.
- f) Problem Reporting. High-line system problems discovered or reported and corrective actions taken shall be documented in the Contractor's daily log and reported to the Engineer within 24 hours of the discovery or report.
- g) Traffic Control. The Contractor shall provide traffic control for all high-line work.
- h) Schedules and Timing.
 - i. The time required to furnish and install the high-lining system as a whole or in accordance with phases, shall be included in the Contract Time. The high-lining schedule shall be submitted to the Engineer for review and approval in accordance with 2-5.3, "Submittals."
 - ii. The Contractor shall coordinate high-lining operations such that the Project's Schedule is not affected or delayed

~~i)~~ Installation

~~i.i)~~ of High-line Piping System.

- ~~ii.i.~~ ~~[w19]~~ The high-line piping system shall be installed in accordance with the approved schedule.
- ~~iii.ii.~~ Piping phases shall be installed in loop systems, with a fire hydrant connection to the water supply at each end.
- ~~iv.iii.~~ The high-line piping system shall be inspected and approved by the City Public Utilities Department, Operations Division familiar with the water system via the Engineer prior to the City Forces charging the system with potable water or connecting to any user service line.
- ~~v.iv.~~ The high-line piping shall be installed along both sides of streets to supply water service connections to water meters. Meter service connection shall not be routed across a roadway, driveway, or other area subject to vehicular traffic.
- ~~vi.v.~~ Shutoff valves shall be installed at each fire hydrant connection, along the piping runs at the check valve, on either side of high-line tee fittings for user connections to all meters and at the ends of cul-de-sac blind runs to permit flushing. The lever handles shall be removed from the valves to prevent unauthorized operation.
- ~~vii.vi.~~ The 2-bolt grooved couplings shall be installed with the bolts oriented as shown on Figure 5, Typical Curb Piping Runs. This orientation permits the pipe to be laid closer to the curb and is less susceptible to damage by auto traffic. To prevent damage to auto tires, coupling bolts shall not extend beyond the thickness of the nut when installed and tightened.

j) Fire Hydrant Connection.

- i. The fire hydrant connection shall be laid as shown in the Standard Drawings **or the details included in the Contract Documents** for Fire Hydrant High-lining Connection. The Contractor shall make the final connection to the fire hydrant system.
- ii. The Contractor shall use elbows of different bend angles ~~and shall be used~~ [w20] as required to align the connection fittings parallel to the sidewalk or curb.
- iii. In situations where the fire hydrant is located such that piping must cross a sidewalk, piping shall be routed under the sidewalk surface in a 6" wide x 6" deep saw cut trench by the Contractor. The trench backfill and temporary asphalt surface shall be tamped and compacted to provide a smooth, safe surface for the duration of the high-lining by the Contractor. Routing the pipe above the sidewalk shall not be permitted.

k) User Connection (Service Meters).

- i. The Contractor shall furnish and install all material and labor as specified; the Contractor shall connect— the water services to the system, see Standard Drawings or the **details included in the Contract Documents** for Residential User High-lining Connection.
- ii. Connection to meters sized up to 1-inch shall be as shown in or the **details included in the Contract Documents** for Residential User High-lining Connection.
- iii. Connection to meters 1½" and larger shall be made with 2" galvanized steel pipe with grooved connections.
- iv. A shutoff valve in the user connection line shall be provided at the high-line tee fitting.
- v. Meters 1½" and larger typically have 2-bolt flanged connections. Provide adapters as required to connect to specific meters.
- vi. Sidewalk crossings may be routed above ground and ramped with temporary asphalt (coldmix), see Standard Drawings or the **details included in the Contract Documents** for Driveway High-lining Crossing or Curb Ramp High-lining Crossing, Typical Driveway or Handicapped Access Crossing, and as required elsewhere in this subsection.
- vii. Field cut, groove, and fit 2" galvanized steel pipe, as required to make user connections. Sections of the high-line piping shall be cut such that service tees are as close as possible to the user meters and service connection hose or piping length is minimized.
- viii. Provide barricades and cones as required by the approved Traffic Control Plan, at service tees and meters, and as required to ensure public safety.

l) Roadway Crossing and Trenching.

- i. Portions of the high-line system should be trenched and buried by the Contractor to avoid interference with roadways ~~and~~ [w21] ~~walkways~~.
- ~~ii.~~ Wherever piping is required to cross a roadway, piping shall be routed below the roadway surface in a 6" wide x 6" deep (approximate dimensions) saw cut trench. Routing the pipe above the roadway shall not be permitted.
- ~~iii.~~ ~~ii.~~ The trench backfill and temporary asphalt surface shall be tamped and compacted to provide a smooth, safe surface for the duration of the high-lining.

m) Vehicle Driveway or Curb Ramp Crossing.

~~i.~~ Wherever the high-line piping crosses a vehicle driveway or curb ramp crossing, the piping shall be provided with temporary asphalt crossing ramps as shown in the Standard Drawings or **the details included in the Contract Documents** for Typical Driveway or Curb Ramp Crossing. The temporary asphalt crossing ramps shall be tamped and compacted to provide a smooth, safe surface for the duration of the high-lining.

~~ii.~~ The temporary asphalt crossing ramps shall be constructed such that they do not interfere with normal storm water or other drainage flows, ~~see the Standard Drawings or details included in the Contract Documents for Driveway or Curb Ramp High-lining Crossing.~~

~~[w22]~~ They shall not divert drainage flows either into the street or onto adjacent properties. Where required to achieve proper drainage, sections of galvanized steel piping shall be installed in the crossing ramp parallel to the high-line piping to allow for drainage past the crossing ramp. Crossing ramp installations shall be inspected and approved by the Engineer.

n) Corners and Curves.

i. Routing the high-lining system around corners and curves shall typically be accomplished by use of 2" hose.

ii. A 2" shutoff valve shall be installed at each end of the curve.

iii. Portions of corners and curves with driveways or curb ramps shall be crossed with galvanized steel pipe as shown on the Standard Drawings or **the details included in the Contract Documents** for Driveway or Curb Ramp High-lining Crossing. Use of hose shall not be permitted at these crossings.

iv. Corners and curves with bend radii too short to be accommodated by hose shall be routed with short sections of galvanized steel pipe and grooved elbows of different bend angles. Pipe shall be cut, grooved, and fitted in the field as required.

v. Portions of the piping and fittings extending 12" or more from the curb shall be protected with temporary asphalt covering of not less than 1 inch thickness above the pipe and fittings. The temporary asphalt covering shall be sloped over the pipe and tamped in place to provide a durable surface.

700-1.2.2.7 Start-up Procedures.

a) System leak test. The Contractor shall:

i. Charge the system with available water pressure, bleed the system of air, and verify that the entire system is filled.

ii. Visually inspect the system for leaks and repair any leaks discovered. The system will not be accepted by the Engineer until all leaks are repaired.

b) Flushing, disinfection, and bacteriological testing of high-line mains.

~~b)i.~~ ~~The~~^[w23] Contractor shall not use the high-lining system to fill and flush any main or piping.

~~i-ii.~~ After the high-line system is fully assembled but not hooked-up to the consumer meters, the Contractor shall flush the piping with potable water from a commercial metered source

until the effluent is clear and free of dirt and debris. The Contractor shall designate the disposal of flushing water via approved methods.

~~ii~~.iii. The Contractor shall disinfect the high-lining piping according to AWWA C651 and 306-1.4.7, "Disinfection."

~~iii~~.iv. The transport, storage, and handling of disinfection materials shall be in accordance with the CFR 1910.120, Hazardous Waste Operations and Emergency Response, CFR 49.12 Hazardous Materials Regulations, and the General Industry Safety Orders of the California Code of Regulations, Title 8, Section 5194.

~~iv~~.v. Pipeline disinfection shall be accomplished with calcium hypochlorite tablets. Short pipe sections, valves, fittings, and similar small portions of the system shall be disinfected with a solution of sodium hypochlorite.

~~v~~.vi. The Contractor shall notify the Engineer 5 Working Days in advance of the date that the high-line system will be disinfected and ready for bacteriological testing.

~~vi~~.vii. The City Water Quality Laboratory will collect samples from three points in the high-lining piping. Two points shall be from taps near the fire hydrant connections at each end, and one from a tap near the center of the piping.

~~vii~~.viii. The City Water Quality Laboratory shall perform bacteriological testing in accordance with AWWA C651 and the City standards.

~~viii~~.ix. The high-line system shall not be accepted until two consecutive sets of acceptable samples collected 24 hours apart pass tests administered by the City Water Quality Laboratory, and until written notice of acceptance is issued by the Engineer. The City Water Quality Laboratory shall be the sole judge as to whether or not the test samples meet or exceed the established test criteria.

~~ix~~.x. In the event that the high-line piping system fails to pass the required bacteriological testing, the Contractor shall re-flush and re-disinfect the lines at no additional cost to the City. Disposal of chlorinated water shall be in accordance with the City standards and regulations. Indiscriminate disposal of chlorinated water shall not be permitted.

~~x~~.xi. On acceptance of bacteriological testing, the Contractor shall drain and flush the highline piping system according to AWWA C651 and the City standards. Disposal of chlorinated water shall be in accordance with the City standards and regulations. Indiscriminate disposal of chlorinated water will not be permitted.

c) Restoration of Normal Service.

i. Flushing of the New Main Line. The Contractor shall not flush the new main line with water from the high-line system.

ii. User Hook-up to the New Main Line.

A. Restoration of user service to the new water main line shall be done only after installation, disinfection, and bacteriological testing of the new water main line is verified by the City, and user connection lines are completed.

B. Transfer of the water service from the high-line to the new water main line shall be performed by the Contractor.

700-1.2.2.8 Disassembly of High-line System.

- a) Disassembly. After restoration of normal service to water users, the Contractor shall disconnect high-lining from all services and breakdown and fully disassembles the high-line system and removes all high-line construction materials and debris from the area by the end of the Working Day.
- b) Restoration of Streets and Other Facilities. ~~Street [w24] resurfacing shall be restored in accordance with 302-6, "Portland Cement Concrete Pavement" and City of San Diego Standard Drawings.~~
- ~~e) The Contractor shall remove all high-lining construction material and debris, and shall restore streets, curbs, gutters, sidewalks, fire hydrants, and other disturbed facilities in accordance with 7-9, "Protection and Restoration of Existing Improvements." Street resurfacing shall be restored in accordance with 302-6, "Portland Cement Concrete Pavement" and City of San Diego Standard Drawings.~~
- ~~c)~~
- d) High-Lining Materials. High-lining materials shall become the Contractor's property.

700-1.2.2.9 Figures. The Contractor shall refer to the high-lining details **provided in the Contract Documents as appendix** or included as Standard Drawings.

ADD: 700-1.2.2.10 Payments. The Bid items provided for high-lining Work shall ~~include cover the~~ Work described in 700-1.1.2.2, "High-lining By the Contractor" ~~and broken down as include the~~ following:

- ~~a) The [w26] lump sum linear foot price bid item for "High-lining By the Contractor", "Furnishing High-lining Materials" shall be full compensation for furnishing all materials necessary to install the high-lining system.~~
 - ~~b) The unit price Bid item for "High Lining Installation and Dismantling" shall be full compensation for installing the high-lining system complete and dismantling it after the restoration of normal service to water users, for - cConnections including water services, and restoration of the surface improvements shall be included in the payment for "Hi Lining Installation and Dismantling."~~
- ~~Payment to the Contractor for, and maintaining and repairing the high-lining system during construction.~~
- ~~c) shall be included in the lump sum Bid item for "High Lining Maintenance and Repairs."~~

700-1.3 Connections to the Existing System. The City Forces will be responsible for making connections and cut-ins to the existing mains as part of the base Bid

700-1.3.1 Connection by the City Forces. The Contractor shall provide the following information about the ~~existing [w27]~~ main prior to connections:

- a) condition of pipes and valves,
- b) type of fitting and joint to which connection is to be made (~~i.e., construction~~), [w28] and
- c) alignment, elevation, and location of the water main and any fittings.

700-1.3.1.1 Connection by the City Forces When the City Forces Cut and Plug the Existing Main.

The City Forces will isolate existing water main to be replaced by the Contractor. The City forces will mark location, elevation, and approximate grade of existing main on street pavement and record this information for future use. The Contractor shall consult and cooperate with the City Forces' supervisor to ensure that the information is understood and used correctly. Within the last 10' to be installed by the Contractor, the Contractor shall install bends, concrete thrust blocks, short lengths of pipe, and other appurtenances necessary to put the new installation on line and grade with the existing pipe.

700-1.3.1.2 Connection by the City Forces When the City Forces Do Not Cut and Plug the Existing Main.

The Contractor shall expose the existing water main where the Work ends. The Contractor shall be responsible for determining the elevations of existing water mains and fittings. The new water main shall be at the same grade and parallel alignment as the existing main and shall be no farther away than 1' from the existing water main. At the option of the Contractor, one or two bends or pulled joints may be used to accomplish this condition.

700-1.3.1.3 Furnishing Materials.

If required in the Contract Documents, the Contractor shall furnish the necessary materials for the City Forces' connection and cut-in work as shown on the Plans to the City. The Contractor shall coordinate closely with the City Forces for the delivery of materials. The delivery location for furnished materials shall be determined by the City Forces. No materials shall be delivered to the City until the City Forces are ready to construct the work, unless otherwise specified, in writing, by the City.

700-1.3.1.4 Pavement Restoration for the City Forces Final Connection.

Within 10 days following the completion of the City Forces final connection work in the Project areas, the Contractor shall remove all temporary resurfacing, saw cut trench area, compact sub-grade and restore affected area with permanent resurfacing in accordance with 302-6, "Portland Cement Concrete Pavement" and City of San Diego Standard Drawings.

700-1.3.1.5 Payment.

The payment for the furnished material for the City Force connection and cut-in work shall cover materials (i.e., fittings, valves, and hardware) including delivery and unloading. The Contractor will be paid under the lump sum Bid item for "Contractor Furnished Materials for City Forces Connection and Cut-in Work for Mains 16-inch and Larger." [w29]

~~Payment for preparatory work in advance of connections by the City Forces in accordance with 700-1.2.1, "High lining by the City Forces" shall be included in the various Bid items. [Traffic[w30] control, saw cutting the trench area, trench cap, and other spot repairs in the vicinity of disturbed area at each restored connection shall be included in the Bid item for Pavement Restoration for the City Forces Final Connection. Asphalt Overlay and Slurry Seal will be paid under separate Bid items.~~

700-1.3.2 Connections to the Existing System by Contractor. If required in the Contract Documents,

the Contractor shall make the connection (e.g., cut-in or tie-in) to the existing mains as shown on the Plans, specified in these specifications, and in conformance with the latest standards of the State Department of Public Health. Suitable facilities shall be provided by the Contractor for proper dewatering, drainage, and disposal of all water removed from the excavation and/or pipe without damage to adjacent property. The Contractor shall locate and expose the existing water main to which connection is to be made prior to and in advance of trenching to permit grade and alignment changes as approved by the Engineer. In the presence of the Engineer or an authorized City Public Utilities Department, Water Operations Division employee familiar with the water system), the Contractor shall make the connections as shown on the Plans regardless of the condition or location of the existing pipe, valves, and fittings with no adjustment in the Contract Price.

700-1.3.2.1 Submittals. The Contractor shall submit Shop Drawings, Working Drawings, and other information in accordance with 2-5.3, "Submittals" prior to start of construction. The drawings and other descriptive material shall adequately describe procedures to be used, materials to be furnished, any related pipeline appurtenances, and trench shoring. Each drawing shall be reproducible original, accompanied by 6 copies of all submitted information. If approved without change or correction, two approved copies will be returned to the Contractor. The Contractor shall include all time impacts of protecting the existing water main in the Schedule.

700-1.3.2.2 Utility Verification for Connection Location. The Contractor shall pothole the location and depth of all utilities to verify that there are no utility conflicts prior to excavation.

The Contractor shall locate and confirm vertical and horizontal locations, size, shape, materials, and construction of existing water mains.

700-1.3.2.3 Notification and Timing of Shutdowns. The Contractor shall coordinate the Work with the City Water Operations Division, and notify them a minimum of 20 Working Days after Engineer's approval of the Contractor's work plan and prior to any shutdown of an existing water line. The City Forces will perform all shutdowns including trial and final attempts. If the Contractor fails to keep the field appointments, the City will bill the Contractor for scheduled the City Forces waiting or standby time and the costs incurred by the City for notification of its customers for the subsequent appointment.

The Contractor shall schedule the requested shutdowns during low demand times. Generally, only Unless otherwise shown on the Plans, the Contractor shall assume -residential areas may be done during the day, and all commercial and industrial areas, including all areas with schools, or businesses, shall be shut down at night. The Contractor shall coordinate with the City's Public Utilities Department to determine verify the appropriate times prior to construction. The City may refuse to shutdown a water line on the day requested by the Contractor due to operational circumstances (e.g., business cannot withstand a shutdown of water at that time; other connecting distribution systems are out of service at the same time; high water demands by customers; etc.) or other reasonable concerns by the City. No request will be denied for arbitrary reasons.

The Contractor shall notify the Engineer 5 Working Days prior to any work that will affect water service. The Contractor shall prepare and distribute, after approval by the City, written notification 3 Working Days prior to starting Work on any water main that will affect service. This notification shall be delivered door-to-door to water users in the affected area. A copy shall be delivered to the Engineer on the date of user notification. [w31]

The Contractor shall notify all consumers with fire services 20 Working Days in advance of any shutdown.

700-1.3.2.4 Connection. Prior to connecting to existing water main, the Contractor shall have all personnel, material and equipment ready to connect the fittings to the existing mains to minimize the shutdown time. The City may postpone or reschedule any shutdown operation if for any reason the City determines that the Contractor is improperly prepared with competent personnel, equipment, or materials to proceed with the connection.

When installing a cut-in tee or cross with new valves, reducers or other fittings that is larger than the existing pipe, the new assembly shall be installed at the depth sufficient to allow the valve to remain below the subgrade of the street which may necessitate lowering the existing pipe. The Contractor shall provide and install the entire assembly -including valves and reducers and any other hardware necessary under the City inspection in accordance with the City Standards. The entire assembly shall be connected in advance to facilitate the expedient connection to existing main.

The Contractor shall clean and disinfect the connection in accordance with AWWA C651.

Shutdown of the water main and Connection operations shall be coordinated with high-lining operation; ~~be performed at low demand times; and~~ [w32] shall be completed within timeline specified in these specifications.

If Connection operation exceeds the time as identified in the notification, causes health and safety risks, or disruption of water service to the consumers, the Contractor shall notify the Engineer and the City's Station 38 at (619) 527-7660 for assistance to provide potable water and temporary high-lines to restore water to the affected consumers. The City will order necessary corrective measures. All costs for corrective measures shall be paid by the Contractor. The Contractor shall be liable to the City for the costs of the City Forces' emergency work.

If existing valves leak excessively once closed during the isolation of the segment that is going to be connected, the ~~City Forces will assist in reducing the influx of water, but the~~ Contractor shall use methods at the Contractor's disposal to work with the resulting leakage. If the influx of water cannot be controlled with two 2-inch pumps sufficiently to complete the work, then the shutdown shall be rescheduled, as agreed upon by the City and Contractor.

700-1.3.2.5 Quality Control. The connection Work shall be in the presence of the Engineer or a Public Utilities Department, Water Operations Division employee familiar with the water system. The Contractor shall take every precaution necessary to prevent trench water, dirt or debris from entering the water mains during connection operation.

Under no circumstances shall a non-disinfected water main, which cannot be isolated and *has not passed bacteriological test*, be connected to an existing disinfected water main.

700-1.3.2.6 Operation of Valves. Valves on the City's water main system shall be cleaned and operated only by the City Forces. The Contractor may exercise valves on services as necessary to complete the Work.

700-1.3.2.7 Repair. If the water main is damaged by the Contractor's operations, the Contractor shall immediately notify the Engineer and the City Water Operations Division representative or the City's Station 38. The City Forces will perform all necessary repairs to the water main. The Contractor shall be liable to the City for the costs of the City Forces' repair work.

700-1.3.2.8 Compaction. Compaction of the trench after installation of the water main shall be in accordance with 306-1.3, "Backfill and Densification."

If the Work is located within a different jurisdiction or agency other than the City or private easement, compaction shall meet the requirements of that agency or utility granting the permit.

700-1.3.2.9 Surface Restoration. The Contractor shall restore to its original grade and condition surfaced areas in accordance with 7-9, "Protection and Restoration of Existing Improvements." After final connection is completed, the Contractor shall remove all temporary resurfacing, compact sub-grade and restore affected area with permanent resurfacing in accordance with 302-6, "Portland Cement Concrete Pavement" and City of San Diego Standard Drawings.

700-1.3.2.10 Payment. "Connection to The Existing System by the Contractor" e.g., cut-in or tie-in will be paid under Bid unit prices for connections, and cut-ins and include furnishing and installing all materials and labor to complete the work. Potholing for and protecting the water main while performing the Work, information essential for making the connection, coordination of Work with the City Forces, scheduling impacts, community outreach, materials and traffic control shall be included in the payment.

700-1.4 Cut and Plug of the Existing System by the Contractor. The cut and plugs of the existing system as part of the base Bid shall be performed by the City Forces.

700-1.4.1 Submittals. The Contractor shall submit Shop Drawings and Working Drawings and other information for the cut and plug of existing water mains in accordance with 2-5.3, "Submittals." The submittals shall adequately describe procedures to be used e.g., distance from valves, thrust blocks for temporary plugs, materials to be furnished, any related pipeline appurtenances, and trench shoring. Each drawing shall be reproducible original, accompanied by 6 copies of all submitted information. If approved without change or correction, 2 approved copies will be returned to the Contractor. The Contractor shall include in the Schedule all time impacts to protect the existing water mains.

The Contractor shall submit traffic control drawings and obtain the Traffic Control Permit from the City prior to the start of the cut and plug and reconnection operations.

700-1.4.2 Utility Verification for Cut & Plug location. The Contractor shall pothole the location and depth of all utilities to verify that there are no utility conflicts prior to excavation.

The Contractor shall locate and confirm vertical and horizontal locations, size, shape, materials, and construction of existing water mains.

700-1.4.3 Notification and Timing of Shutdowns. The Contractor shall coordinate the Work with the City Water Operations Division, and notify them a minimum of 20 Working Days after Engineer's approval and prior to any shutdown of an existing water line. The City Forces will perform all shutdowns. If the Contractor fails to keep the field appointments, the City will bill the Contractor for scheduled the City Forces waiting or standby time and the costs incurred by the City for notification of its customers for the subsequent appointment.

The Contractor shall ~~make every effort to~~ schedule the requested shutdowns during low demand times. Unless otherwise shown on the plans, the Contractor shall assume ~~Generally, only~~ residential areas may be done during the day, and ~~all commercial and industrial areas, including all areas with schools, or businesses, shall be shut down at night.~~ The Contractor shall coordinate with the City's Public Utilities Department ~~to determine~~ verify the appropriate times prior to construction. The City may refuse to shutdown a water line on the day requested by the Contractor due to operational circumstances (i.e., business cannot withstand a shutdown of water at that time; other connecting distribution systems are out of service at the same time; high water demands by customers; etc.) or other reasonable concerns by the City. No request will be denied for arbitrary reasons.

The Contractor shall notify the Engineer 5 Working Days prior to any work that will affect water service. The Contractor ~~will~~ shall prepare and distribute, after approval by the City, written notification 3 Working Days prior to starting Work on any water main that will affect service. This notification shall be delivered door-to-door to water users in the affected area. A copy shall be delivered to the Engineer on the date of user notification.

The Contractor shall notify all consumers with fire services 20 Working Days in advance of any shutdown.

700-1.4.4 Cut and Plug. Prior to cutting and plugging of the existing water mains, the Contractor shall have all personnel, material and equipment ready to minimize the shutdown time. The Contractor shall organize its workforce, equipment and operations to protect the existing water main while performing the Work.

Shutdown of water main and cut and plug operations shall be coordinated with high-lining operation and shall be performed during low demand times and shall be completed **within the timeline specified in these specifications.**

After isolation of the mains, rarely does a completely dry condition exist in the trench. If the existing valves leak excessively once closed during the isolation of the segment that is going to be plugged, ~~the City Forces will assist in reducing the influx of water if needed, however,~~ the Contractor shall use methods at Contractor's disposal to work with the resulting leakage. If the influx of water cannot be controlled with two 2-inch pumps sufficiently to complete the work, then the shutdown shall be rescheduled, as agreed upon by the City and Contractor.

If the cut and plug operation exceeds the time as identified in the notification or causes health and safety issues or disruption of water service to the consumers, the Contractor shall notify the Engineer and the City's Station 38 at (619) 527-7660 for assistance. The City will provide potable water and or temporary high-lining to restore water to the affected consumers. The City will order necessary corrective measures.

All costs for corrective measures shall be paid by the Contractor. The Contractor shall be liable to the City for the costs of the City Forces' emergency work.

700-1.4.5 Quality Control. Cut and plug of existing water lines shall be completed in a safe, neat and orderly manner. Plugs shall be capable of blocking pressurized main with no visual leak detected. The Contractor shall take every precaution necessary to prevent trench water, dirt or debris from entering the water mains during the capping or plugging operation.

Cut and plug shall not proceed if the City Public Utilities Department, Operations Division employee familiar with the water system is not present for the duration of the cut and plug.

After the cut and plug operation, the water main and appurtenances shall be disinfected and field tested by the Contractor in accordance with the latest edition of AWWA C651. The City Forces shall take water samples for bacteriological tests in accordance with Section 7 of the AWWA C651.

Suitable facilities shall be provided for proper de-watering, drainage, and disposal of all water removed from the excavation or pipe without damage to adjacent property.

700-1.4.6 Operation of Valves. Valves on the City's water system shall be cleaned and operated only by the City Forces. The Contractor shall exercise valves on services as necessary to complete the Work.

700-1.4.7 Repair. If the water system is damaged by the Contractor's operations, the Contractor shall immediately notify the Engineer and the City's Station 38 or the City Water Operations Division representative. The City Forces will perform all necessary repairs to the water main. The Contractor shall be liable to the City for the City Forces' work for the repair.

700-1.4.8 Surfaced Areas Impacted by Cut & Plug. Surfaces impacted by excavation to install cut and plug shall be temporarily backfilled, resurfaced, and maintained.

700-1.4.9 Payment. Locating e.g., potholing for and protecting the water main, coordination of Work with the City Forces, any scheduling impacts, community outreach, furnishing and installing materials, and traffic control shall be included in the unit price payment for "Cut and Plug of The Existing System by the Contractor."

Bid item changes to our master bid list

Add these Deductive bid items:

“Pavement Restoration for City Forces Final Connection”(700-1.3.1.5)

"Contractor Furnished Materials for City Forces Connection and Cut-in Work for Mains 16-inch and Larger." (700-1.3.1.5)

“Contractor Furnished Materials for City Forces High-line work” (700-1.2.1.3)

“High-lining Removed By Contractor”(700-1.2.1.3)

Add new bid items:

"Contractor Furnished Materials for City Forces Connection and Cut-in Work for Mains 16-inch and Larger." (700-1.3.1.5)

” connections to the existing system by Contractor (for 20” and higher)

Revise these bid items:

high-line bid items as stated above

8-10” connections to the existing system by the Contractor , to 8-12” connections by Contractor

12-16” connections to the existing system by the Contractor, to 16” connections by Contractor

8-10” cut in tee or cross by Contractor, to 8-12” cut in tee by Contractor and 8-12” cross by Contractor (2 items)

16” cut in tee or cross by Contractor, to 16” cut in tee by Contractor and 16” cut in cross by Contractor (2 items)

Delete Duplicate bid item for “Highline Installation and dismantaling” from our master bid list.